UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/324,098	06/01/1999	JAMES P. REILLY	140-035	1049

7590 12/20/2004

JOHN F WARD
WARD & OLIVO
708 THIRD AVENUE
NEW YORK, NY 10017

EXAMINER	
NGUYEN, KIET TUAN	
ART UNIT	**PAPER NUMBER**
2881	

DATE MAILED: 12/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/324,098	REILLY ET AL.	
	Examiner	Art Unit	
	Kiet T. Nguyen	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 September 2001 and 31 January 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-149* is/are pending in the application.

4a) Of the above claim(s) *13-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 26-149* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date: _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1) The amendment filed on 13 September 2001 amending claim 19 and adding new claims 26-89; the supplemental preliminary amendment also filed on 13 September 2001 withdrawing claims 13-25, which have been copied from Vestal et al. U.S. Patent No. 5,760,393, from consideration in the subject application; and the amendment filed on 31 January 2003 adding new claims 90-149 have been acknowledged.

Applicant is also suggested to file a separate application for the interference claims 13-25, which have been copied from Vestal et al. U.S. Patent No. 5,760,393.

2) The reissue oath/declaration filed with this application is defective because it fails to identify at least one error which is relied upon to support the reissue application. See 37 CFR 1.175(a)(1) and MPEP § 1414.

Specifically the statement in the declaration that "subject matter described in the specification as originally filed was mistakenly omitted from the claims" does not identify any specific error in the patent and thus is insufficient to satisfy the requirement of the Rule.

3) Claims 1-12 and 26-149 are rejected as being based upon a defective reissue declaration under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175.

The nature of the defect(s) in the declaration is set forth in the discussion above in this Office action.

4) This application is objected to under 37 CFR 1.172(a) as lacking the written consent of all assignees owning an undivided interest in the patent. The consent of the assignee must be in compliance with 37 CFR 1.172. See MPEP § 1410.01.

A proper assent of the assignee in compliance with 37 CFR 1.172 and 3.73 is required in reply to this Office action.

5) Claims 56-149 are rejected under 35 U.S.C. 251 as being improperly broadened in a reissue application made and sworn to by the assignee and not the patentee. A claim is broader in scope than the original claims if it contains within its scope any conceivable product or process which would have infringed the original patent. A claim is broadened if it is broader in any one respect even though it may be narrower in other respects.

6) Applicant is requested to provide a PTO-1449, which indicates all references recited in the original patent.

Objected Drawings

7) The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the ion reflector and means for energizing the ion reflector as recited in claims 26, 56, 89-90, 106, 121 and 136; the initial velocity components of the ions, which are perpendicular and parallel to the first electrode as recited in claim 35; the first electrode having a groove through the center of its surface for receiving the sample source as recited in claim 39; the ions having a non-isotropic initial velocity distribution as recited in claims 40, 73, 100 and 146; the deflector for deflecting unwanted ions from the ion path to the detector as recited in claims 46, 79, 103, 133 and 148; the first region including a sample source defined between first and second grids as recited in claim 63; the ions having first and second initial velocity components which are perpendicular and parallel to the second

grid as recited in claim 69; the first grid having a groove through the center of its surface for receiving the sample source as recited in claim 72; means for changing the potential difference between the sample holder ... reflector as recited in claim 89; the ions having a second initial velocity component parallel to surfaces of the electrodes of the means for accelerating as recited in claims 95, 111, 126 and 141; and the ion accelerating field orthogonally accelerating the ion generated within the source region in a path leading to the ion detector as recited in claim 135 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Rejection Under 35 U.S.C. 112, Second Paragraph

8) Claims 52-53 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 52 recites the limitation "the first field" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 95 recites the limitation "said sample source" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Rejection Under 35 U.S.C. 112, First Paragraph

9) Claims 26, 35, 39-40, 46, 52-53, 56-119, 121, 126, 133 and 135-149 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification is completely silent for reciting the limitations "an ion reflector" and "means for energizing the ion reflector" as recited in claims 26, 56, 89-90, 106, 121 and 136; "initial velocity components of the ions, which are perpendicular and parallel to the first electrode" as recited in claim 35; "the first electrode having a groove through the center of its surface for receiving the sample source" as recited in claim 39; "the ions having a non-isotropic initial velocity distribution" as recited in claims 40, 73, 100, 116 and 146; "a deflector for deflecting unwanted ions from the ion path to the detector" as

recited in claims 46, 79, 103, 118, 133 and 148; "means for employing an optimization method to determine optimum values for the first field and the ion accelerating field" as recited in claim 52; "the first field is zero" as recited in claim 57; "the first region including a sample source defined between first and second grids" as recited in claim 63; "the ions having first and second initial velocity components which are perpendicular and parallel to the second grid" as recited in claim 69; "the first grid having a groove through the center of its surface for receiving the sample source" as recited in claim 72; "means for employing an optimization method to determine optimum values for the potentials and the predetermined times at which the potentials are applied" as recited in claim 85; "means for changing the potential difference between the sample holder ... reflector" and "the first and second electric field ... will be zero" as recited in claim 89; "the ions having a second initial velocity component parallel to surfaces of the electrodes of the means for accelerating" as recited in claims 95, 111, 126 and 141; "the ions desorbed from a surface of the sample holder" as recited in claims 97 and 113; and "the ion accelerating field orthogonally accelerating the ion generated within the source region in a path leading to the ion detector" as recited in claim 135. Therefore, the Examiner don't understand how is the ions reflected from the ion path to the detector by energizing an ion reflector? How are the single ions having the initial velocity components that are perpendicular and parallel to one electrode? What is the non-isotropic initial velocity distribution? What is the electric field that is zero? What is the element that changes the potential difference between the sample holder and the first

element to have a second electric field? etc... How is the TOFMS operated while the above-features are not disclosed in the specification?

Additional explanations are needed if applicant insists on including these features in the claims 26, 35, 39-40, 46, 52-53, 56-119, 121, 126, 133 and 135-149 without the insertion of new matter.

Clarification without the introduction of new matter is required.

Rejection Under 35 U.S.C. 102(b)

10) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-12, 26, 30-46, 48, 51-52, 56-58, 62, 64-71, 73-79, 81, 84-85, 89-104, 106-118, 120-133 and 135-148 are rejected under 35 U.S.C. 102(b) as being anticipated by Vestal (5,160,840).

Claims 26, 35, 39-40, 46, 52-53, 56-119, 121, 126, 133 and 135-149, as the best understood by the meaning of 112, 1st, 2nd and the objection(s) above, are rejected as:

Vestal (5,160,840) discloses, in figs. 1-12, a time of flight apparatus and method. The apparatus includes an accelerating region having a first electric field and defined by a sample holder 12 held at an electrical potential V (see col. 7, lines 2-9) and a ground plate grid electrode 18 (see figs. 1-5 and 8); a pulse laser beam 16 for ionizing a sample disposed to a channel formed in the sample holder 12 having a metal surface; an electrode 42 having an aperture for passing ions and applied by a voltage of an

adjustable potential source 58 for producing a second electric field in the accelerating region; a controller 90 for controlling the second electric field in the accelerating region (see col. 13, lines 61-64); a drift tube 54 for focusing accelerated ions; an ion reflector for reflecting the accelerated ions; a detector 52 applied by a voltage of a voltage source 61 (see fig. 8) for detecting and determining the mass to charge ratios of the accelerated ions; the equations 1-55 which are a set of ion variables including initial position distribution and initial velocity distribution of the ions generated in the accelerating region, measure the time of flight of each region and total the time of flight of the ions from the sample 12 to the detector 52 and determine the mass to charge ratios according to the time of flight of the detected ions; the equations 1-55 which also calculate to determine an optimum set of values for minimizing the time spread of the ions in each region and the total distance from the sample 12 to the detector 52 due to effects of the variable ions (see col. 5, line 35 to col. 13, line 18); the figs. 1-6 and 8 shown the ions generated from the sample 12, which have an initial velocity component perpendicular to the accelerating electrodes 42 and 18; fig. 12 shown the ions generated from the sample 12, which have an initial velocity component perpendicular to the sample surface and parallel to the accelerating electrodes 42 and 18, and a second velocity component perpendicular to the accelerating electrodes 42 and 18; and the ion source which may be of a variety of type including electron impact, chemical ionization, thermospray or electrospray (see col. 13, lines 57-60 and col. 14, lines 50-52).

Rejection Under 35 U.S.C. 103(a)

11) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 27-29, 47, 49-50, 53-55, 59-61, 63, 72, 80, 82-83, 86-88, 105, 119, 134 and 149 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vestal (5,160,840).

Vestal (5,160,840) discloses all the features as discussed above except a conductive metal grid as recited in claims 27, 59 and 63; a dielectric surface as recited in claims 28 and 60; a dielectric surface with a thin film coating as recited in claims 29 and 61;a fast atom bombardment as recited in claims 47 and 80; plasma desorption as recited in claims 49 and 82; secondary ion generation as recited in claims 50 and 83; simplex optimization as recited in claims 53 and 86; a DNA sample as recited in claims 54, 88, 105, 119, 134 and 149; a protein sample as recited in claims 55, 87, 105, 119,

134 and 149; and the first grid having a groove through the center of its surface for receiving the sample source as recited in claim 72.

Using the conductive metal grid, a dielectric surface or a dielectric surface with a thin film coating for containing a sample is considered to be obvious variation in design, since using the material such as the conductive metal grid, a dielectric surface or a dielectric surface with a thin film coating for making the sample container does not effect to generate ions from the sample in the mass spectrometer, and it is also well known in the art to use the conductive metal grid, a dielectric surface or a dielectric surface with a thin film coating for containing a sample, thus would have been obvious to one skilled in the art use the conductive metal grid, a dielectric surface or a dielectric surface with a thin film coating in the Vestal (5,160,840) for containing the sample.

Applying the fast atom bombardment, plasma desorption or secondary ion generation for producing ions in the mass spectrometer is also considered to be obvious variation in design, since it is well known in the art to use the fast atom bombardment, plasma desorption or secondary ion generation for producing ions in the mass spectrometer, thus would have been obvious to one skilled in the art use the fast atom bombardment, plasma desorption or secondary ion generation in the Vestal (5,160,840) for generating ions.

Applying the simplex optimization method is also considered to be obvious variation in design, since the simplex optimization method is one of mathematic algorithms for calculating the parameters, thereby it is considered to be well known in the art to use the simplex optimization method for calculating the parameters of the time

of flight information in the mass spectrometer, thus would have been obvious to one skilled in the art use the simplex optimization method in the Vestal (5,160,840) for calculating the parameters of the time of flight of ions in the mass spectrometer.

Using the DNA sample or protein sample for producing ions in the mass spectrometer is also considered to be obvious variation in design, since it is well known in the art to use the DNA sample or protein sample in the mass spectrometer, thus would have been obvious to one skilled in the art use the DNA sample or protein sample in the Vestal (5,160,840) for generating ions.

12) The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1) Janes discloses a time of flight mass spectrometer.

Conclusion

13) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiet T. Nguyen whose telephone number is 571-272-2479. The examiner can normally be reached on Monday-Friday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 571-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KN

KIET T. NGUYEN
PRIMARY EXAMINER